

exposing said second alignment layer to light in an oblique direction, such that
said second alignment layer includes a pretilt angle and a pretilt direction; and
providing a liquid crystal material between said first and second substrates.

REMARKS

In the Office Action, the Examiner requested assistance from the Applicants in correcting any errors in the specification, which Applicants may become aware of. The Examiner also objected to the numbering of claims 9 and 84, which the Examiner renumbered as claims 5 and 59. The Examiner rejected claims 9 and 59 under 35 U.S.C. § 103(a) as unpatentable over Jpn. J. Appl. Phys. Vol. 31 pp. 2155-64 (1992) ("*Schadt*"). The Examiner also rejected claims 9 and 59 under the judicially created doctrine of obviousness-type double patenting over U.S. Patent 6,091,471 and over U.S. Patent 6,295,111.

Specification

The Examiner requested assistance from the Applicants in correcting any errors in the specification, which Applicants may become aware of. Applicants have reviewed the specification and requested amendment of all errors that Applicants are aware of to date. Applicants will request amendment of any additional errors, if Applicants become aware of any.

Objection to claims

The Examiner also objected to the numbering of claims 9 and 84, which the Examiner renumbered as claims 5 and 59. In view of the Examiner's renumbering of claims 9 and 84 to claims 9 and 59, respectively, Applicants request withdrawal of the objection as moot.

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Amendment

Applicants have amended claim 9 to more particularly claim Applicants' invention. Applicants have noted the amendments in the attached Appendix with insertions indicated by underlining and deletions indicated by square brackets.

Applicants note that the amendment to claim 9 identified in the Appendix to the Preliminary Amendment filed on June 26, 2001, inadvertently did not indicate the requested changes to claim 9 as originally filed. The attached Appendix also provides a revised version of claim 9 showing changes between claim 9 as originally filed and as amended on June 26, 2001.

Rejection under § 103(a)

The Examiner rejected claims 9 and 59 under § 103(a) as unpatentable over "Applicants' admitted prior art" *Schadt*. (Paper No. 7, at 2.) According to the Examiner, *Schadt* discloses, "a method of manufacturing a liquid crystal display comprising the steps of: providing a first alignment layer on a first substrate and rubbing the first alignment layer (conventional alignment layer in graphs a and A of figure 9); providing a second alignment layer on a second substrate and exposing the second alignment layer to unpolarized UV light (pp 2157, line 14 and graphs b and B of figure 9)." (Paper No. 7 at 3.) Applicants respectfully traverse the rejection of these claims.

To establish a *prima facie* case of obviousness under §103(a), each of three requirements must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine references or modify a reference. (See MPEP § 2143.)

Second, a reasonable expectation of success must exist that the proposed modification

will work for the intended purpose. (See *id.*) Moreover, both of these requirements must “be found in the prior art, not in applicant’s disclosure.” (*Id.*) Third, the reference or references, taken alone or in combination, must disclose or suggest every element recited in the claims. (See MPEP §2143.03.)

Claim 9 recites, *inter alia*:

A method of manufacturing a liquid crystal display,
comprising the steps of: . . .

rubbing said first alignment layer such that said first
alignment layer has a first pretilt angle associated therewith;
. . .

exposing said second alignment layer to light in an oblique
direction, such that said second alignment layer includes a
pretilt angle and a pretilt direction

Schadt discloses a liquid crystal (LC) aligning mechanism that occurs when polymerizing photopolymers with linearly polarized light. (*Schadt*, p. 2155, col. 1, ¶ 2.) In one embodiment, a linear photopolymerization (LPP) experiment employs spin coating substrates with a PVMC solution. (*Id.*, p. 2157, col. 1, ¶ 2.) The coated substrate is dried, prepolymerized by unpolarized light, and the prepolymerized film is then exposed to linearly polarized UV light. (*Id.*, p. 2157, col. 2, ¶¶ 1–2.) The LC aligning properties of LPP-PVMC films were next investigated by preparing LCDs including, e.g., an LPP substrate and a substrate coated with a conventional, mechanically buffed aligning layer. (*Id.*, p. 2158, col. 1, ¶ 4.)

There is no disclosure or suggestion in *Schadt*, however, of, “rubbing said first alignment layer such that said first alignment layer *has a first pretilt angle* associated therewith,” or “exposing said second alignment layer to light *in an oblique direction*,

such that said second alignment layer *includes a pretilt angle and a pretilt direction*," as recited in claim 9. The fact that photoalignment can be formed exposing liquid crystals to unpolarized UV light, but this is not the same as the above claim elements.

Further, the Examiner acknowledges that *Schadt* fails to disclose or suggest, "exposing the second alignment layer to UV light in oblique direction," but goes on to allege that "it would have been obvious to one of ordinary skill in art to expose an alignment layer to light in oblique direction, such as *Schadt et al.* figure 2, since it is notoriously well known in the art to form pretilt angles with different directions on such alignment layer." (Paper No. 7, at 3.) Applicants do not agree and the Examiner has not cited any art to support this statement. Further, even were it true, the Examiner provides no motivation to *modify Schadt* to expose "said second alignment layer to light in an oblique direction, such that said second alignment layer includes a pretilt angle and a pretilt direction," as recited in claim 9. According to the Manual of Patent Examining Procedure:

A statement that modification of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects for the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references.

(MPEP § 2143.01 (8th ed. Rev. Feb. 2003).) The Examiner has identified no "objective reason" for modifying *Schadt*. Absent such a showing, *Schadt* cannot render claim 9 obvious.

At least because *Schadt* fails to disclose or suggest all claim elements, and no other reference compensates for its deficiencies, and because there is no motivation to modify *Schadt* to obtain the claimed combination, Applicants believe claim 9 is allowable over *Schadt*. Applicants believe claim 59 is likewise allowable at least because of its dependence from allowable claim 9.

Rejection under double patenting

The Examiner also rejected claims 9 and 59 under the judicially created doctrine of obviousness-type double patenting over U.S. Patent 6,091,471 and over U.S. Patent 6,295,111. Applicants have concurrently filed Terminal Disclaimers, which address any double patenting concern.

In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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APPENDIX

9. (Twice Amended) A method of manufacturing a liquid crystal display, comprising the steps of:

- providing first alignment layer on a first substrate;
- rubbing said first alignment layer such that said first alignment layer has a first pretilt angle associated therewith;
- providing a second alignment layer on a second substrate [:] ;
- exposing said second alignment layer to [unpolarized] light in an oblique direction, such that said second alignment layer includes a pretilt angle and a pretilt direction; and
- providing a liquid crystal material between said first and second substrates.

June 26, 2001 Amendment

9. (Amended) A method [in accordance with claim 1, wherein said light is incident substantially perpendicular to said second alignment layer] of manufacturing a liquid crystal display, comprising the steps of:

- providing first alignment layer on a first substrate;
- rubbing said first alignment layer such that said first alignment layer has a first pretilt angle associated therewith;
- providing a second alignment layer on a second substrate;
- exposing said second alignment layer to unpolarized light in an oblique direction,
- such that said second alignment layer includes a pretilt angle and a pretilt direction; and
- providing a liquid crystal material between said first and second substrates.